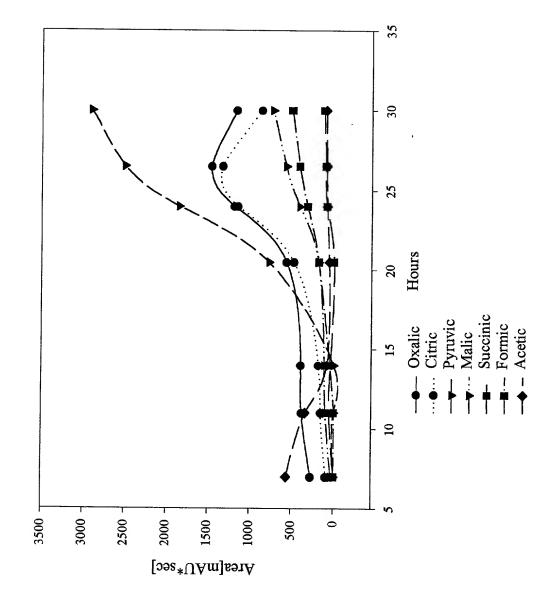
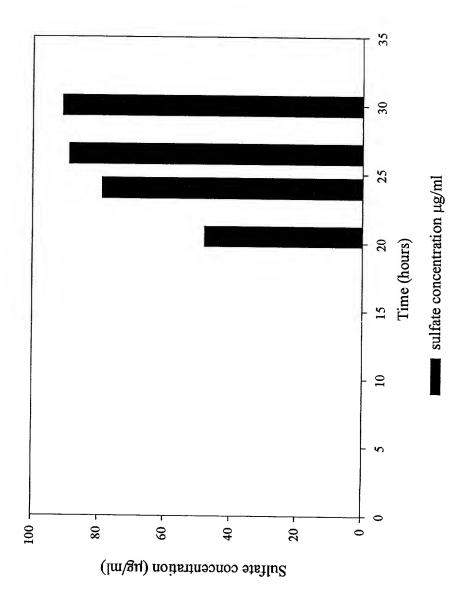


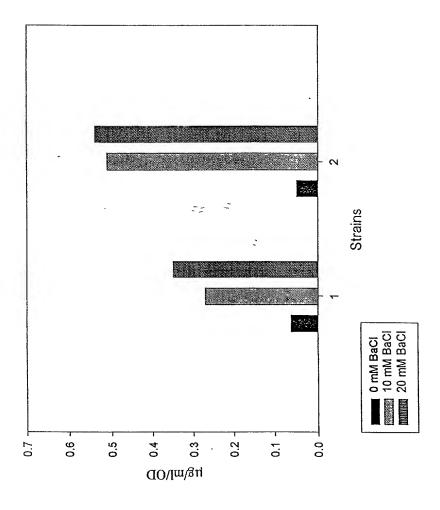
Arginine, Methionine, Proline [mg/L] - 550 - 500 - 450 - 400 - 350 - 250 - 250 - 100 - 100 - 50 Fermentation time [hrs] Aspartic acid
Threonine
Arginine
Methionine
Proline
Argine
Arginine
Arginine
Arginine
Arginine
Arginine 25 20 15 10 Aspartic Acid, Threonine, Cysteine, Lysine [mg/L]

Figure 4B









6





Figure 7

		10	20	3.0	4.0	50	
DSFBP314 AMI	1	MSNRPIYLDY				DC D	
DSFBP536 AMI	1	MSNRPIYLDY	SATTPVDPSV	VEKMI PWI.VE	SEGNEASES	AFGWEAEDAV	50
		60	70	80			50
DSFBP314.AMI	51	EKAREEVAKL				TOU	
DSFBP536.AMI	51	EKAREEVAKL	VNADPREIVW	TSGATESONI.	AIRGAMETA	ENGRALLIVA	100
		110	120				100
DSFBP314.AMI	101	TEHKAVLDTC					
DSFBP536.AMI	101	TEHKAVLDTC	RELEROGEEV	TVI.DVODDGI	TCIDAEKAAL	RPDIILLVSVM	150
		160	170		190		150
DSFBP314.AMI	151	MVNNEIGVIQ			190	200	
DSFBP536.AMI	151	MVNNEIGVIQ	DIAMETER	PROTTERMAN	AQATGKVEID	LOKEKVDLMS	200
		210	220	230			200
DSFBP314.AMI	201	FSAHKTYGPK		DDVD TEX ON	240	250	
DSFBP536.AMI	201	FSAHKTYGPK	CICALUMBY	HMOMALYANA	GGGHERGERS	GTLATHQIVG	250
	~~~	260	270				250
DSFBP314.AMI	251			280	290	300	
DSFBP536.AMI	251	MGEAFRLARE	EMCTENERVR	MLRDRLLAGL	TQIEEVYVNG	SMEHRVPHNL	300
	231	MGEAFRLARE	AVABILEMENT				300
DSFBP314.AMI	201	310	320	330	340	350	
DSFBP536.AMI	301	NISFNYVEGE	SLIMAIKELA	VSSGSACTSA	SLEPSYVLRA	LGRNDELAHS	350
20121330.7411	301	NISFNYVEGE	SLIMAIKELA				350
DSFBP314.AMI	251	360	370	380	390	400	
DSFBP536.AMI	321	SIRFTLGRFT	TEQEIDITIE	LIKSRVGKLR	DMSPLWEMAQ	EGIDLNSVQW	400
201 21 330 . AM	32T	SIRFTLGRFT	TEGEIDATIE			EGIDLNSVQW	400
DSFBP314.AMI	401	410	420	430	440	450	
DSFBP536.AMI	401	AAH*		• • • • • • • • •			450
IPM. DECIGISE	401	AAH*		• • • • • • • • • •	• • • • • • • • • •		450
DSF314.DNA	,	10	20	30	40	50	
DSF536F1.DNA	1	ATGAGCAATC	GCCCCATCTA	CCTGGACTAC	TCGGCTACCA	CGCCGGTCGA	50
DSF536R1.DNA	1	ATGAGCAATC	GCCCCATCTA	CCTGGACTAC	TCGGCTACCA	CGCCGGTCGA	50
	1						50
DSF53611.DNA DSF53612.DNA							50
DS:53612.DNA	1						50
DODDIA DID		60	70,		90	100	
DSF314.DNA	51	CCCGAGCGTG	GTCGAGAAAA	TGATTCCCTG	GTTGTACGAG	AGTTTCGGCA	100
DSF536F1.DNA	51	CCCGAGCGTG	GTCGAGAAAA	TGATTCCCTG	GTTGTACGAG	AGTTTCGGCA	100
DSF536R1.DNA	51						100
DSF53611.DNA	51						100
DSF53612.DNA	51						100
20221		110	120	130	140	150	
DSF314.DNA	101	ATCCGGCCTC	GCGCAGCCAC	GCCTTTGGCT	GGGAAGCCGA	GGACGCGGTC	150
DSF536F1.DNA	101	ATCCGGCCTC	GCGCAGCCAC	GCCTTTGGCT	GGGAAGCCGA	GGACGCGGTC	150
DSF536R1.DNA	101						150
DSF53611.DNA	101						150
DSF53612.DNA	101						150
		160	170	180	190	200	130
DSF314.DNA	151	GAGAAGGCCC	GCGAGGAAGT	TGCCAAGCTG	GTCAACGCCG	ATCCGCGCGA	200
DSF536F1.DNA	151	GAGAAGGCCC	GCGAGGAAGT	TGCCAAGCTG	GTCAACGCCG	ATCCGCGCGA	200
DSF536R1.DNA	151						200
DSF53611.DNA	151						200
DSF53612.DNA	151						200
		210	220	230	240	250	200
DSF314.DNA	201	GATCGTCTGG	ACTTCCGGCG		GGACAACCTG	GCCATCAACC	252
DSF536F1.DNA	201	GATCGTCTGG	ACTTCCGGCG	CTACCGAGTC	GGACAACCTG	GCCATCAAGG	250 250
DSF536R1.DNA	201						
DSF53611.DNA .							250
DSF53612.DNA	201						250
		260	270	280	290	300	250
DSF314.DNA	251	GCGCGGCGAA		GAGCGCGGCA	AGCACATCAT	TACCCTCA NO.	365
DSF536F1.DNA	251	GCGCGGCGAA	TTTCTACGCC	GAGCGCGGCA	AGCACATCAT	TACCOTCARG	300
DSF536R1 DNA	251			- IOCOCOCA		-ACCGICAAG	300
DSF53611.DNA	251						300
							300





DSF53612.DNA	251 -						300
DSF 33012. SIA	~ ~ ~	310	320	330	340	350	
DSF314.DNA	301 2	CCGAACACA	AGGCGGTGCT	GGATACCTGT	CGGGAGCTCG	AACGCCAGGG	350
DSF536F1.DNA	301 7	CCGAACACA	AGGCGGTGCT	GGATACCTGT	CGGGAGCTCG .	AACGCCAGGG	350
DSF536R1 DNA							350
DSF53611 DNA	301 -						350
DSF53612 DNA	301						350
		360	370	380	390	400	
DSF314.DNA	351	CTTTGAAGTG	ACCTACCTGG	ATGTCCAGGA	CGATGGTCTG	CTCAGCCTCG	400
DSF536F1.DNA	351	CTTTGAAGTG	ACCTACCTGG	ATGTCCAGGA	CGATGGTCTG	CTCAGCCTCG	400
DSF536R1.DNA	351						400
DSF53611.DNA	351						400
DSF53612.DNA	351						400
		410	420	430	440	450	
DSF314.DNA	401	ATGCGTTCAA	GGCTGCGCTG	CGCCCGGATA	CCATCCTGGT	GTCGGTGATG	450
DSF536F1.DNA	401	ATGCGTTCAA	GGCTGCGCTG	CGCCCGGATA	CCATCCTGGT	GTCGGTGATG	450
DSF536R1.DNA	401						450
DSF53611.DNA	401						450
DSF53612.DNA	401				CCTGGT	GTCGGTGATG	450
501 550 12 12111		460	470	480	490	500	
DSF314.DNA	451	ATGGTCAACA	ACGAGATCGG	CGTCATCCAG	GACATCGCCG	CGCTGGGCGA	500
DSF536F1.DNA	451	ATGGTCAACA	ACGAGATCGG	CGTCATCCAG	GACATCGCCG	CGCTGGGCGA	500
DSF536R1.DNA	451						500
DSF53611.DNA	451						500
DSF53612.DNA	451	ATGGTCAACA	ACGAGATCGG	CGTCATCCAG	GACATCGCCG	CGCTGGGCGA	500
D3F 33612.DKA		510	520	530	540	- 550	
DSF314.DNA	501	GATCTGCCGC	GAGAAGGGCA	TCATCTTCCA	CGTGGACGCG	GCCCAGGCCA	550
	501	CATCTCCCCC	GAGAAGGGCA	-CATCTTCCA	CGTGGACGCG	GCC-AAGCCA	550
DSF536F1.DNA							550
DSF536R1.DNA	501					C	550
DSF53611.DNA	501	CATCTCCCC	GAGAAGGGCA	TCATCTTCCA	CGTGGACGCG	GCCCAGGCCA	550
DSF53612.DNA	201	560		580		600	
Danata DNA	553	CCGGCAAGGT	CGAGATCGAC		TGAAGGTGGA	CCTGATGTCG	600
DSF314.DNA	227	ACCCCAACCT	CGAGATC				600
DSF536F1.DNA	221	ACGGCAAGGI	CGAGATC				600
DSF536R1.DNA	227		TCGAC	CTGCAGAAGC	TGAAGGTGGA	CCTGATGTCG	600
DSF53611 DNA	221	CCCCCNACCT	CCDCATCGAC	CTGCAGAAGC	TGAAGGTGGA	CCTGATGTCG	600
DSF53612.DNA	22T	610					
		mmcmcccccc	י אראאהארמדם		GGCATCGGCG	CGCTGTATGT	650
DSF314.DNA	601	110100000	ACAMONOGIA				650
DSF536F1.DNA	601						650
DSF536R1.DNA	607	TTCTCCCCCCC	T DODAGACGTA	CGGCCCCAAG	GCATCGCC	CGCTGTATGT	650
DSF53611.DNA	601	TICICGGCG	_ ACAAGACGIP	CGGCCCCAAG	GGCATCGGCG	CGCTGTATGT	650
DSF53612.DNA	601						
		660				GCGGCGGCC	700
DSF314.DNA	651	GCGGCGCAA	3 CCGCGCGIGG	GCATCGAGGC			700
DSF536F1.DNA	651				C CCACATCCA	GGCGGCGGCC	700
DSF536R1.DNA	651	GGCGCAA	3 CCGCGCGTGI	GNAICGAGG	C CCAGAIGCA	GGCGGCGGCC	700
DSF53611.DNA	651	GCGGCGCAA	G CCGCGCGTG	CATCORGO	C NTDCATGCA	GGCGGCGGCC	700
DSF53612.DNA	651						,,,,
		71	0 72	73		A GATCGTCGGC	750
DSF314.DNA				S GGCACGC1G	G CCACGCACCA		750
DSF536F1.DNA	701	L					750
DSF536R1.DNA	701	l ACGAACGGG	G CTTCCGGTC	G GGCACGNTG	G CCACGCACC	A GATCGTCGGC	750
DSF53611.DNA	70:	l ACGAACGGG	G CTTCCGGTC	G GGCACGCTG	G CCACGCACC	A GATCGTCGGC	
DSF53612.DNA	70:	L ACGAACG					750
		76	0 77	0 78	0 79		0.00
DSF314.DNA	75	1 ATGGGCGAG	G CGTTCCGCC	T GGCGCGCGA	G GAAATGGGC	A CCGAGAACGA	800 800
DSF536F1.DNA	75	1					
DSF536R1.DNA	75	1 ATGGGCGAG	G CGTTCCGCC	T GGCGCGCGA	G GAAATGGGC	A CCGAGAACGA	800
DSF53611.DNA	75	1 ATGGGCGAG	G CGTTCCGCC	T GGCGCGCGA	G GAAATGGGC	A CCGAGAACGA	800
DSF53612.DNA	75	1					800
		81	LO 82	0 83			
DSF314.DNA	80	1 GCGCGTGCC	C ATGCTGCGC	G ACCGCCTGC	CT GGCCGGCCT	G ACGCAGATCG	850
DSF536F1.DNA	80	1					850
DSF536R1.DNA	80	1 GCGCGTGC	GC ATGCTGCGC	G ACCGCCTGC	CT GGCCGGCCI	G ACGCAGATCG	850
DSF53611.DNA	80	1 GCGCGTGC	GC ATGCTGCGG	G ACCGCCTGC	CT GGCCGGCCT	G ACGCAGATCG	850
DSF53612.DNA	80	1					850

		860	670	880	890	900	
DSF314 DNA	851	AGGAAGTGTA				GCACAACCTG	900
DSF536F1.DNA							900
DSF536R1.DNA	851	AGGAAGTGTA	TGTGAACGGC	AGCATGGAGC	ACCGCGTGCC	GCACAACCTG	900
DSF53611.DNA	851	AGGAAGTGTA	TGTGAACGGC	AGCATGGAGC	ACCGCGTGCC	GCACAACCTG	900
DSFS3612.DNA	851						900
		910	920	930	940	950	
DSF314.DNA	901	AACATCAGCT	TCAACTATGT	CGAGGGCGAG	TCTCTGATCA	TGGCGATCAA	950
DSF536F1.DNA	901						950
DSF536R1.DNA	901	AACATCAGCT	TCAACTATGT	CGAGGGCGAG	TCTCTGATCA	TGGCGATCAA	950
DSF53611.DNA	901	AACATCAGCT	TCAACTATGT	CGAGGGCGAG	TCTCTGATCA	TGGCGATCAA	950
DSF53612.DNA	901						950
		960	970	980	990	1000	•
DSF314.DNA	951	GGAGCTGGCC	GTTTCCAGCG	GTTCGGCCTG	CACGTCGGCC	AGCCTGGAGC	1000
DSF536F1.DNA	951						1000
DSF536R1.DNA	951	GGAGCTGGCC	GTTTCCAGCG	GTTCGGCCTG	CACGTCGGCN	AGCCTGGAGC	1000
DSF53611.DNA	951	GGAGCTGGCC	GTTTCCAGCG	GTTCGGCCTG	CACGTCGGC-		1000
DSF53612.DNA	951						1000
		1010	1020	1030	1040	1050	
DSF314.DNA	1001	CGTCCTATGT	GCTGCGCGCG	CTGGGCCGCA	ACGACGAGCT	GGCGCACAGC	1050
DSF536F1.DNA	1001						1050
DSF536R1.DNA	1001	CGTCCTATGT	GCTGCGCGCG	CTGGGCCGCA	ACGACGAGCT	GGCGCACAGC	1050
DSF53611.DNA	1001						1050
DSF53612.DNA	1001						1050
		1060	1070	1080	1090	1100	
DSF314.DNA	1051	TCCATCCGCT	TTACCCTGGG	CCGCTTCACG	ACCGAACAGG	AAATCGACTT	1100
DSF536F1.DNA	1051						1100
DSF536R1.DNA	1051	TCCATCCGCT	TTACCCTGGG	CCGCTTCACG	ACCGAACAGG	AAATCGACTT	1100
DSF53611.DNA	1051						1100
DSF53612.DNA	1051			~~~~~~			1100
		1110	1120	1130	1140	1150	
DSF314.DNA	1101	CACGATCGAA	CTGATCAAGA	GTCGTGTCGG	CAAGCTGCGC	GATATGTCGC	1150
DSF536F1.DNA	1101						1150
DSF536R1.DNA	1101	CACGATCGAA	CTGATCAAGA	GTCGTGTCGG	CAAGCTGCGC	GATATGTCGC	1150
DSF53611.DNA	1101				~		1150
DSF53612.DNA	1101						1150
		1160	1170	1180	1190	1200	
DSF314.DNA	1151	CGTTGTGGGA	AATGGCCCAG	GAAGGCATTG	ATCTGAATTC	CGTGCAGTGG	1200
DSF536F1.DNA	1151				~		1200
DSF536R1.DNA	1151	CGTTGTGGGA	AATGGCCCAG	GAAGGCATTG	ATCTGAATTC	CGTGCAGTGG	1200
DSF53611.DNA	1151						1200
DSF53612.DNA	1151						1200
		1210	1220	1230	1240	1250	
DSF314.DNA	1201	GCCGCGCACT	GA				1250
DSF536F1.DNA	1201						1250
DSF536R1.DNA	1201	GCCGCGCACT	GA				1250
DSF53611.DNA							1250
DSF53612.DNA	1201						1250

